

What Is Claimed Is:

1. A rotor in a rotating electrical machine comprising;  
permanent magnets embedded in the rotor core, and

5 magnetic flux short circuit preventive holes extending  
from the circumferential ends of said permanent magnets  
constituting magnetic poles to the vicinity of outer  
periphery of said rotor core;

10 said rotor being a rotor with embedded permanent  
magnets further characterized in that,

15 when the axis extending in the center direction of the  
magnetic pole of said rotor is assumed as d-axis, and the  
axis extending in the interpolar direction 90 degrees  
deviated from the center direction of said magnetic pole  
in terms of electric angle is assumed as q-axis,

the radial distance between the outer periphery of said  
magnetic flux short circuit preventive hole and that of  
said rotor core is increased gradually in conformity to  
the approach to d-axis side from q-axis.

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2. A rotor in a rotating electrical machine comprising;  
permanent magnets embedded in the rotor core, and

25 magnetic flux short circuit preventive holes extending  
from the circumferential ends of said permanent magnets  
constituting magnetic poles to the vicinity of outer

periphery of said rotor core;

said rotor being a rotor with embedded permanent magnets further characterized in that,

5 when the axis extending in the center direction of the magnetic pole of said rotor is assumed as d-axis, and the axis extending in the interpolar direction 90 degrees deviated from the center direction of said magnetic pole in terms of electric angle is assumed as q-axis,

10 an angle with respect to the rotor center formed between the ends of two adjacent magnetic flux short circuit preventive holes on the d-axis side is smaller than the angle formed by the outer periphery of said permanent magnet with respect to the rotor center, and

15 the radial distance between the outer periphery of said magnetic flux short circuit preventive hole and that of said rotor core is increased gradually in conformity to the approach to d-axis side from q-axis.

3. A rotor with embedded permanent magnets according to  
20 Claim 1 or 2 characterized in that the radial length of said magnetic flux short circuit preventive holes is decreased gradually in conformity to the approach to d-axis side from q-axis.

5 4. A rotor with embedded permanent magnets according to  
any one of Claims 1 to 3 characterized in that, when the  
radial distance between the outer periphery of said  
magnetic flux short circuit preventive holes and that of  
said rotor core is assumed as "a" closer to the q-axis,  
and "b" closer to the d-axis, the ratio of "a" to "b" is  
about 1 to 3 or 1 to 4.

10 5. A rotor with embedded permanent magnets according to  
any one of Claims 1 to 4 characterized in that the permanent  
magnet embedded in said rotor core is a flat plate magnet.

15 6. A rotor with embedded permanent magnets according to  
any one of Claims 1 to 4 characterized in that the permanent  
magnet embedded in said rotor core is designed in a concave  
arch-shaped form with respect to the outer periphery of  
the rotor.

20 7. A rotor with embedded permanent magnets according to  
any one of Claims 1 to 4 characterized in that the permanent  
magnet embedded in said rotor core is designed in a convex  
arch-shaped form with respect to the outer periphery of  
the rotor.

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from the circumferential ends of said permanent magnets constituting magnetic poles to the vicinity of outer periphery of said rotor core;

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11. A rotating electrical machine equipped with a rotor comprising;

permanent magnets embedded in the rotor core, and  
magnetic flux short circuit preventive holes extending  
5 from the circumferential ends of said permanent magnets  
constituting magnetic poles to the vicinity of outer  
periphery of said rotor core;

said rotating electrical machine further  
characterized in that said magnetic flux short circuit  
10 preventive hole is formed in such a way that the radial  
distance between the outer periphery of said magnetic flux  
short circuit preventive hole and that of said rotor core  
is increased gradually in conformity to the approach to  
the pole from interpolar position; and

15 an angle with respect to the rotor center formed  
between the ends of two adjacent magnetic flux short  
circuit preventive holes on the interpolar side is smaller  
than the angle formed by the outer periphery of said  
permanent magnet with respect to the rotor center.

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